## IV. REMARKS

1. Claims 1-5 remain in the application. Claims 1 and 3 have been amended.

2. The specification has been amended to clarify the headings in compliance with US practice.

3. The Abstract of the Disclosure has been amended to comply with MPEP 608.01(b).

4. Figures 1, 4, and 5 have been amended to include the legend "Prior Art."

5. Applicant appreciates the indication that claim 2 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. However, Applicant finds that claim 2 is patentable as it stands for the reasons stated below.

6. Applicant respectfully submits that claims 1 and 3-5 are not anticipated by Pakravan et al. (US 6,259,391, "Pakravan").

Pakravan fails to disclose or suggest setting a target energy value based on the percentage of clipped samples, and updating the gain setting based on the target energy value and the average energy, as recited by claim 1.

Pakravan also fails to disclose or suggest a gain calculation block, arranged for determining the target energy value based on the clipping percentage and the gain setting of the adjustable gain amplifier, as recited by claim 3.

As described in column 2, lines 27-60, Pakravan is directed to an automatic gain control system. A target threshold level, corresponding to a target signal clipping ratio, is used to amplify a received signal in order to utilize the dynamic range of an analog-to-digital converter. After an initialization phase, the transceiver continues to monitor the signal clipping ratio and readjusts the analog gain control as required to adapt the fluctuations in RFI.

Column 8 line 29 through column 9 line 2 of Pakravan describes the operation of the system, which in a first step runs like a classical AGC, deriving gain from an average energy calculation block, until the system is stable. This gain value is then used to initialize target values for clipping ratio analyzers. In a second step, clipping and clipping only is used to determine the gain to apply.

In contrast, the present invention uses an initial target value for the average energy, and initial target step and clipping limits are set at startup. The clipping percentage and average energy of the signal are computed at the same time. Pakravan does one or the other, but does not compute them at the same time.

In addition, the present invention uses the percentage of clipped samples to set a target energy value. Pakravan does the opposite, that is, Pakravan uses a gain value to initialize the clipping ratio analyzers.

Furthermore, the present invention differs from Pakravan in that an updated gain setting is computed from the target energy value and the average energy. Clipping is not directly used in the gain calculation, only energy. In contrast, after

initialization, Pakravan exclusively uses the clipping ratio analyzers to set the gain.

At least for these reasons, independent claims 1 and 3, and dependent claims 4 and 5 are not anticipated by Pakravan.

7. Applicant respectfully submits that claims 1 and 3-5 are patentable over the combination of the admitted prior art and Börjesson et al. (US 6,606,047, "Börjesson ").

The combination of the admitted prior art and Börjesson fails to disclose or suggest setting a target energy value based on the percentage of clipped samples, and updating the gain setting based on the target energy value and the average energy, as recited by claim 1.

The cited combination also fails to disclose or suggest a gain calculation block, arranged for determining the target energy value based on the clipping percentage and the gain setting of said adjustable gain amplifier, as recited by claim 3.

There is no disclosure in the admitted prior art or in Börjesson related to these features. Setting or determining the target energy value using the clipping percentage results in a significant technical effect as explained below.

In the classical AGC method, the energy is estimated and averaged over one period. The clipping percentage may also be computed. The two results are sent to the "Gain calculation" block for each period. This block derives the gain from the same base as a classical AGC (if target > energy then lower gain; if target < energy then rise gain).

In contrast to the classical AGC, in the present invention the target energy is not fixed but may vary based on the clipping percentage. The present invention is different in that clipping is not used directly in the gain calculation but used to control the energy target value.

Using a range of clipping ratios (between a lower and an upper limit) allows the present invention to track dynamic range changes of the signal by automatically updating the target as demonstrated by simulation results.

The incoming signal of Figure 3 of the present application is shown here.

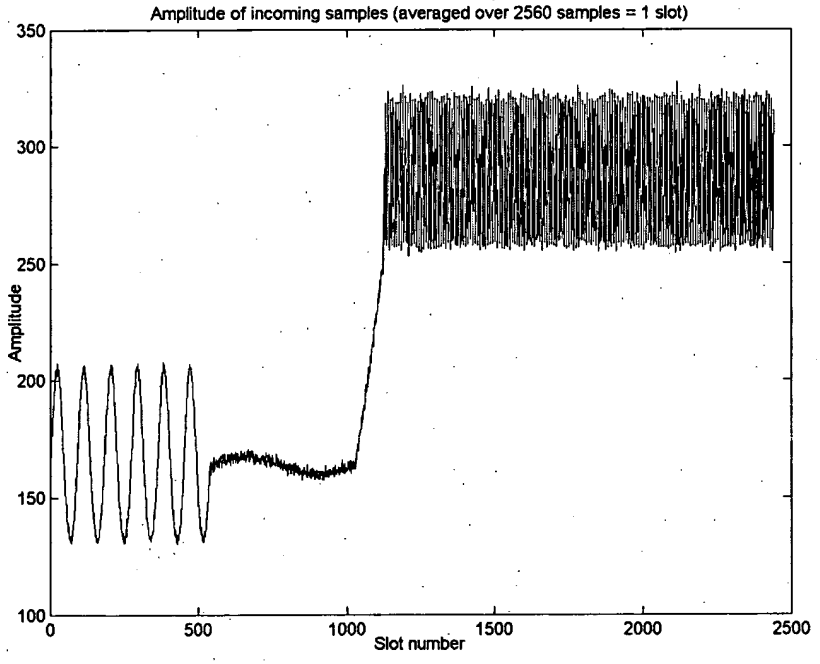
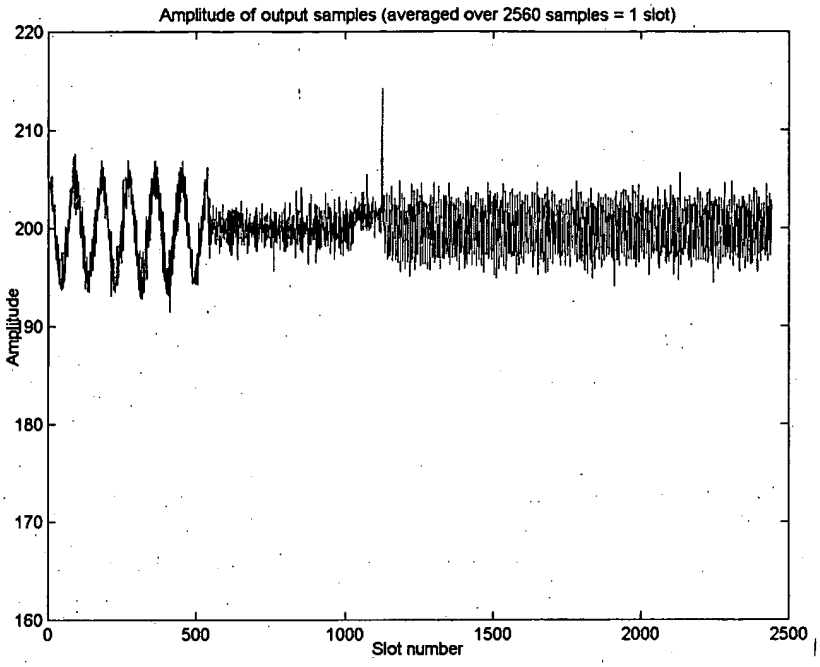
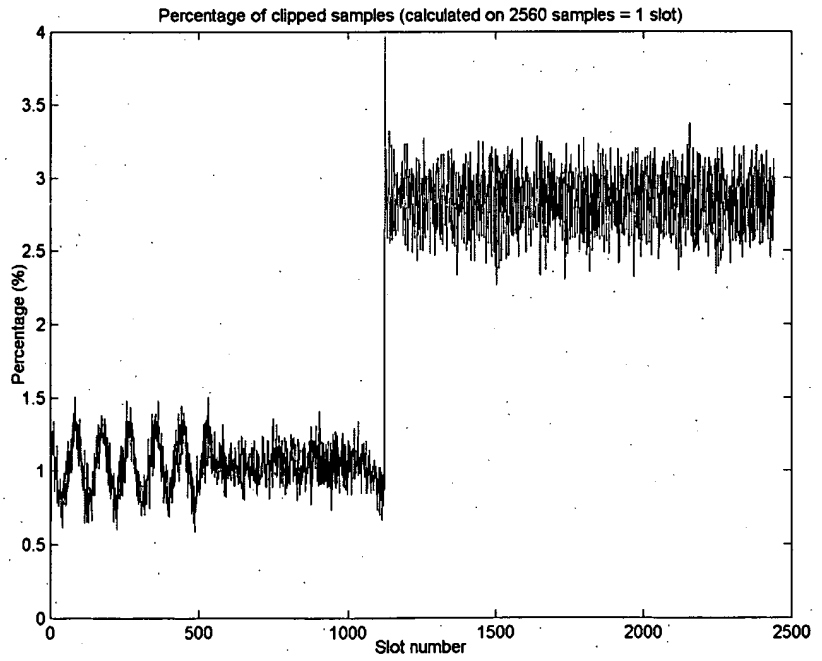



**Figure 3**

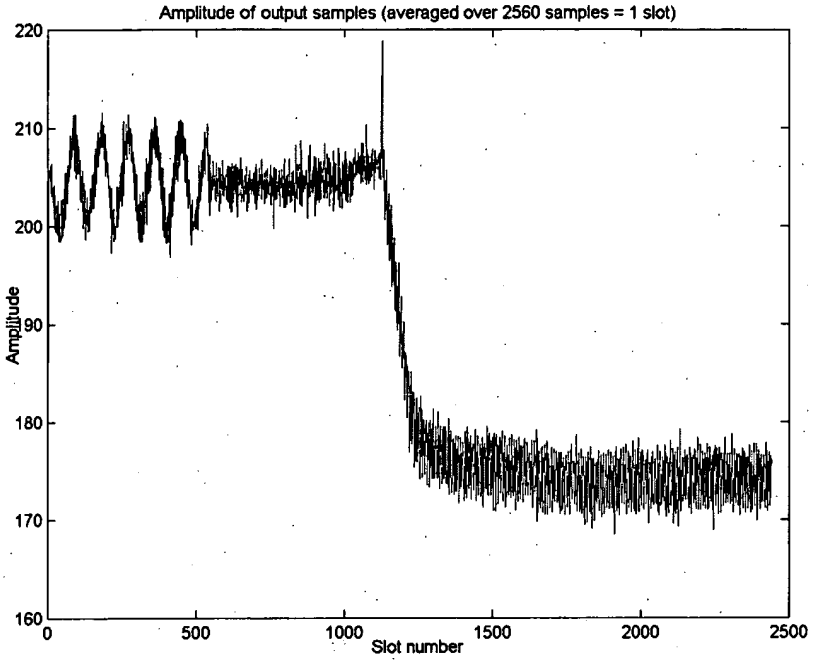
The results of processing this signal by a system using the classical approach may be compared to the results of processing this signal by a system using the method of the invention.

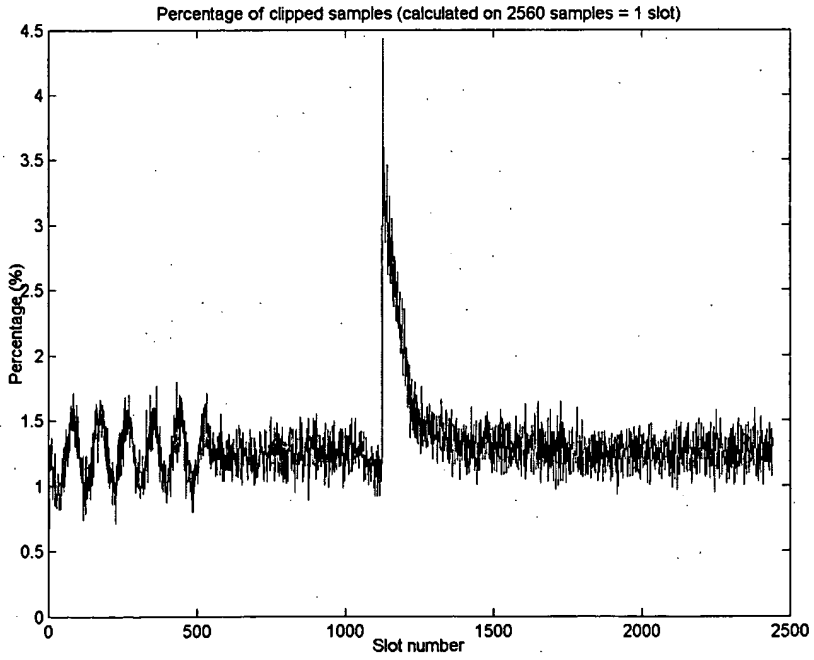
The classical approach yields the following results as shown in Figures 4 and 5 of the present application, reproduced here:



In contrast, the present invention yields the following results as shown in figures 6 and 7, reproduced here:



Thus, the dynamic range of the input signal changes over time and, given that the energy target is based on the percentage of clipped signals, the energy target follows the dynamic range of the signal in the present invention. When the dynamic range is low, the target energy is automatically set higher resulting in more resolution while clipping is kept below precalculated limits. When the dynamic range is high, and the signal more frequently exceeds the boundaries of allowed clipping ratios, the target energy is automatically set lower to avoid too much degradation of the received signal.

At least for these reasons, Applicant submits that the combination of the admitted prior art and Börjesson fails to disclose all the features of the present invention and that claims 1 and 3-5 are patentable over the cited combination.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

Joseph V. Gamberdell, Jr. 6 August 2004
Joseph V. Gamberdell, Jr. Date
Reg. No. 44,695

Perman & Green, LLP
425 Post Road
Fairfield, CT 06824
(203) 259-1800
Customer No.: 2512

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date indicated below as first class mail in an envelope addressed to the Commissioner of Patents, P.O. Box 1450, Alexandria VA 22313-1450.

Date: 8/6/2004 Signature: Mary Minn
Person Making Deposit